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10/582,222	06/08/2006	**Atsushi Ohma**	040356-0591	3852

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Please find below and/or attached an Office communication concerning this application or proceeding.

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/582,222
Filing Date: June 08, 2006
Appellant(s): OHMA, ATSUSHI

Michael D. Kaminski
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed August 2, 2010 appealing from the Office action mailed 5/20/2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 11-20

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

Independent claim 11 pertains to a fuel cell stack having:

- A "membrane electrode assembly" comprising a gas diffusion electrode on each side of a membrane. This element being required and known in the fuel cell art.

- A "Separator" comprising ribs in contact (physical, thermal, electrical, etc. would all be adequate interpretations) with the "membrane electrode assembly". Ribs form channels that are capable of flowing gas there through.

- A “first region” and "second region” located within the interior of the fuel cell stack. The interior is not defined and is therefore interpreted to be two regions that have different properties at that finite location.

- A “first region” and "second region” having higher temperature at the first region than second. The system established is in constant flux of reactants and therefore infinitesimal heat signatures vary based on operation state.

- “Gas passage", “ribs”, or “gas diffusion electrode” provide the first region’s related gas diffusion layer with improved gas diffusion over the second region's related gas diffusion layer.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant’s statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading “WITHDRAWN REJECTIONS.” New grounds of rejection (if any) are provided under the subheading “NEW GROUNDS OF REJECTION.”

(7) Claims Appendix

The examiner agrees with the copy of the appealed claims contained in the "Claims Appendix" to the appellant's brief.

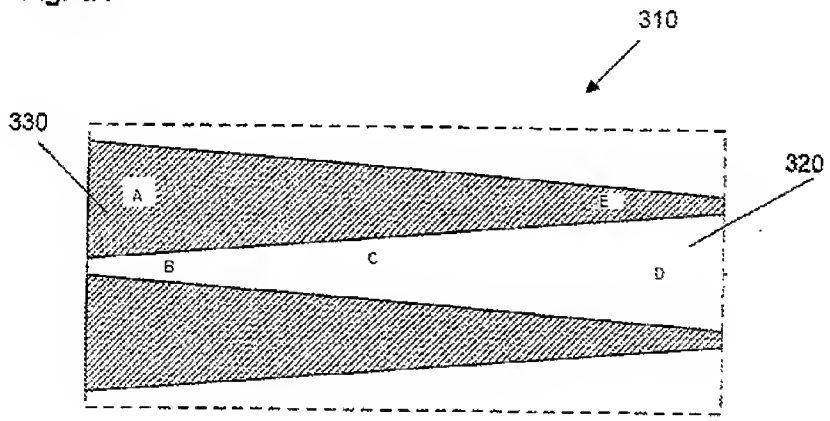
(8) Evidence Relied Upon

2003/0077501	**Knights**	**4-2003**

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Fig. 4A



Claim Rejections - 35 USC § 102

1. Claims are rejected under 35 U.S.C. 102(b) as being anticipated by Knights et al (PGPUB 2003/0077501).

Claim 11: The instant claim is to a separator comprising ribs wherein it is commonly known that separator is also defined as a bi-polar plate or a plate between the electrode-membrane-electrode assembly and the ribs are entities forming a gas or fluid flow channel. Upon inspection of the specification, the claim to temperature variation is due to non-uniformities in the gas flow path and coolant channels, wherein

Knight teaches such limitations. One specific example is temperature dependency based on sectional area.

Knights teaches an electrochemical fuel cell having reactant flow passages with non-uniform design to increase reactant access to adjacent fluid distribution layer at the outlet region as compared to the inlet region [Abstract]. Knight teaches a fuel cell comprising: A membrane with electrodes on opposite sides [Paragraph 4], the plurality of cells [Description, Figure 3], at least a first region and second region wherein temperatures of the first region are higher due to change of channel structure of the flow field [Figure 4-6]. The gas diffusion is improved by the embodiments of figure 4-6, specifically figure 4 wherein the reactant flow passage widens [Paragraph 32]. It can be interpreted that each region can be higher in temperature or lower in temperature than any other region. The structure of the system goes through start up, steady state, and shut down. During Start up: section B is hotter than C hotter than D; Steady state: Section D may be hotter than C hotter than B. Sections A and E are inherently going to be lower temperature than the B-D

Claim 12: 1st region is element C and 2nd region is element B or D.

Claim 13: Knights teaches coolant flow channels that mirror the reactant flow passages [Paragraph 14, 34-39]. If region 1 is C then element B or D as the 2nd element reject this claim based on where the inlet of the coolant is, with or against the flow of the fuel.

Claim 14: This claim compared element C of a middle fuel cell with the same element C of an outer cell. It is an inherent property that the middle will have a higher

temperature during operation due to heat sources being on both sides of it whereas the end portions will only have 1.

Claim 15: 1st section is element C and 2nd section is element B wherein B is smaller in sectional area than C

Claim 16: The 1st section has not been defined structurally and is therefore open to interpretation, Sections B, C, D widen toward outlet and are lower in temperature than sections A and E as well as each other.

Claim 17: Section 1 being C or D has section B or C, respectively, where section 1 has smaller ribs wherein the ribs are the area that gas does not flow.

Claim 18: The width of the rib, around element E decreases from a 1st region of element C.

Claim 19-20: Knight teaches using carbon as filler materials which do not completely block the passage of reactants [Paragraph 28, 30]. The relative porosity of the gas diffusion electrode will increase as the reactant moves from inlet to outlet since it is in contact with more surface area of the electrode. This is true because a region of the electrode covered by a rib has an effective porosity of 0 in the stacking direction.

(10) Response to Argument

II. "Examiner has been applying an incorrect claim interpretation to claim 11": The "interior" of the fuel cell is interpreted to be within the bound of any element listed by the applicant defining the "fuel cell". Interior to the fuel cell is very broad. The examiner has taken the interpretation of regions to have different properties. In any fuel cell, the inlet and outlet will have infinitesimal characteristic changes including

temperature and pressure. These would be interpreted as a first and second region. The examiner has identified at least 5 regions in the reprint and labeling of Figure 4A of the prior art Knights that show locations that are distinct regions in steady state operation.

III. As stated above, Knight teaches two regions with distinct environmental properties that are different and therefore teaches the structure implied by having two regions.

IV. "Higher temperature regions": Temperature is dependant on the systems state of reactant flow (IE. Startup, steady state, shutdown, and standby). The examiner has identified and explained that there exist at least 5 regions within Knights that has various properties and that these 5 will have a different relationship in terms of temperature at the various system states.

"First": This argument is not convincing as to changing the width of the flow passages. Temperature distribution is related to the amount of fuel at the electrodes and the change of width in relation to the inlet and outlet will create a temperature mapping of the system that is associated with the system.

"Second": There is no claim limitation that forbids the center from heating up. The applicant has stated, interior to the fuel cell, and then proceeds to list various elements that set the bounds for the interpretation of the limitation. The applicant has also not factored in a decrease of pressure in the region with his assumption wherein the pressure decrease is dependant on the system inputs.

"Claims 12-20": The applicant does not argue the statements made by these rejections and therefore are maintained since the claim to 11 is maintained.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/STEPHEN YANCHUK/

Examiner, Art Unit 1795

Conferees:

/Ula C Ruddock/

Supervisory Patent Examiner, Art Unit 1729

/Patrick Joseph Ryan/

Supervisory Patent Examiner, Art Unit 1726